Gulliford and colleagues report in this issue of the *International Journal of Epidemiology* on a study in Trinidad and Tobago that investigated whether household food insecurity was associated with obesity in this middle-income country. They found that food insecurity was associated with underweight but not with obesity. Food insecurity was also associated with decreased consumption of fruits and vegetables, a result previously reported in several studies, and with physical limitations, a result previously reported for elders in the US.

Prior studies of the association of food insecurity and obesity have been done in high-income countries and found that white women and adolescent girls in families that were food insecure were more likely to be obese. One study in New York State in 1993 found that, whereas mild or moderate food insecurity was associated with a higher risk of obesity, severe food insecurity was associated with a lower risk. These prior results suggest a possible explanation for why Gulliford and colleagues observed that food insecurity was related to underweight and not obesity, if the severity of food insecurity in their sample was relatively high.

To evaluate this possible explanation, we can compare the percentages of affirmative responses for the six items in the abbreviated food security measure with those reported from other samples. The percentages of affirmative responses in the Trinidad and Tobago sample were about two times higher than in the 1995 US sample, and were similar to those of the 1993 New York State sample. Also, the second item listed (item 3 in Figure 1) that...
asked about ‘balanced meals’ had a much higher percentage in Trinidad and Tobago than expected from the pattern found in the US.

Gulliford and colleagues used the abbreviated food security measure without modification and without evaluation as to its suitability for Trinidad and Tobago. The rationale cited was to ‘allow comparability of results’, but comparability is not assured if the items do not have equivalent meaning in the two settings. As the authors pointed out, there were unexplained ethnic differences in food insecurity in their sample. These differences could be due to the differential validity of the food security measure across the ethnic groups.

The authors stated further that ‘it is possible that there are cultural differences in perception and reporting of food insecurity, and this possibility makes the application of more objective measures of food supply desirable’. Both objective and experience-based subjective measures are desirable and potentially complementary. But, the potential problems with the application of the US measure to Trinidad and Tobago are likely to arise not because an experience-based measure was inherently inadequate, but because the authors did not take the steps necessary to ensure that the measure they used was valid in their setting.

Validation determines whether a measure is suitable for providing useful analytical measurement for a given purpose and context, and rests upon meeting each of six criteria. A measure shown to be valid in one context is not necessarily valid in another context. Ideally, an experience-based measure of food insecurity would be developed from in-depth understanding of the experience of food insecurity in the context in which the measure is to be used to ensure that the measure is well-grounded (criterion 1 in ref. 6). Colleagues and I have recently developed experience-based measures of food insecurity in Bangladesh and Burkina Faso from in-depth interviews that are quite different from the US measure. This is not just an issue of language. The experience of food-insecure people, and the constructs underlying their understanding and expression of that experience, differs between these two developing countries and from the US.

At a minimum, Gulliford and colleagues should have done cognitive testing to help evaluate whether the performance of the US measure was consistent with that expected (criterion 2 in ref. 6), and to gather the information needed to adapt the measure to the context of Trinidad and Tobago. This cognitive testing should have been done with members of the various ethnic groups to ensure that respondents understand the survey items and wording as intended by the developers and that respondents are able to answer the items in a manner that reflected their experience with food insecurity. Without this information, we cannot interpret the ethnic differences that they observed.

The importance of doing cognitive testing, or at least some evaluation of the suitability of the items, was demonstrated in a study in Indonesia. In that study, there was not sufficient time to do a full evaluation of the measure, but the testing that was done revealed that various items needed to be altered somewhat in their construction. One item that asked about ‘balanced meals’ was not meaningful to informants, and had to be changed for the survey. Another study found problems with this same item. Therefore, it is not surprising that, in the Trinidad and Tobago sample, it is this item that deviated from the expected pattern.

In summary, the US approach to develop an experience-based measure of food insecurity that can be readily implemented in surveys has proven to be highly successful. This success rests on the careful development and validation of the measure. The approach used in the US holds great promise for developing suitable experience-based measures of food insecurity in other settings. Achieving this promise requires implementing the approach fully, rather than simply using uncritically a measure that was previously developed in another setting. Based on our research developing such measures, we have prepared a manual to guide researchers and programme staff who wish to undertake this approach. The manual outlines a series of steps to be completed in 3 months or less, and is available at web address <www.fantaproject.org>.

References

6 Frongillo EA. Validation of measures of food insecurity and hunger. J Nutr 1999;129:506S–09S.